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Delusions in Schizophrenia: where are we and where Do we need to go?

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Abstract

Although psychotherapy is indicated for the treatment of delusions in schizophrenia, it is unclear exactly what form of psychotherapy is most effective. To help clarify what psychotherapy modalities should be used for delusions in schizophrenia, this review explored current literature to examine the effectiveness of various psychotherapy modalities. Clinical trials were found through an online database and (when possible) only trials that included a control or wait-list condition were included. The central conclusion of this review is that cognitive behaviour therapy (CBT) is the most effective psychotherapy option for delusions. Specifically, CBT has been demonstrated to achieve moderate effect sizes and long-term improvements in delusional symptoms, although the evidence remains equivocal. Important implications for clinicians as well as future research directions are also discussed.

Keywords: Delusions; Psychotherapy, Schizophrenia, Cognitive behaviour therapy; Internal dialogue theory

Introduction

A conceptual cornerstone in psychopathology is the notion of 'delusions'. In casual conversation the word delusion is used in an imprecise and broad manner; however, within psychiatry this word has a more specific meaning. In essence, a delusion is a false belief that is firmly held [1]. More specifically, a delusion can be broadly (and vaguely) defined as an unsubstantiated belief that is close to, or at times, impervious to counter evidence [2]. However, it should be noted that whilst such beliefs usually cannot be substantiated from an impartial perspective, from the subjective perspective of a patient, such beliefs may be well supported by considerable and persuasive evidence. Within the context of schizophrenia, delusions frequently (but not necessarily) have two additional attributes: firstly, they may be bizarre, for example, they may involve the supernatural or nonsensical. Secondly, they are inconsistent with an individual's culture or society [3]. Although this definition has served researchers and clinicians reasonably well, it lacks detail, and consequently generates numerous questions and confusion. For instance, how can one clearly and reliably distinguish between over-valued ideas and a bona fide delusion? In other words, it is not clear at which point beliefs (in things like the supernatural) switch from being an over-valued idea to a genuine delusion. In practice, many clinicians deem a belief a delusion if it appears to significantly and frequently compromise a person's daily functioning.

Given that delusions are so frequently associated with psychological problems such as psychotic disorders, it is perhaps unappreciated that delusions are a symptom for more than 75 conditions including endocrine disorders, Alzheimer's disease, and acquired brain-injury [2]. For the 0.5% - 1.5% of the population who are diagnosed with schizophrenia, many will chronically suffer distressing and dysfunctional delusions [3]. Even with the availability of antipsychotic medication, delusions can persist and foster chronic and severe distress, which in turn profoundly compromises an individual's quality of life [3,4]. Therefore, there is a strong need to complement and refine existing treatment protocols in order to provide enduring benefits to sufferers, and reduce the costs these individuals have on the health system.

The purpose of this literature review is to determine what form of psychotherapy is most indicated for delusions in schizophrenia (n.b., the word 'delusion' will henceforth refer only to delusions in schizophrenia). Initially, this review will look at studies that focus on overall symptomology, before examining positive symptoms and finally just delusions. The central aim of this review is to examine with detail what research has revealed specifically about psychotherapy for delusions. The focus will then shift to explaining three other common treatment modalities: ACT, Supportive Psychotherapy, and Compliance Therapy. This review will also explore what elements of therapy elicit a positive outcome and discuss future research options.

Treatment Methods and Effectiveness

Overview

Delusions have been treated by a range of therapy methods; among the various options, the following methodologies have stood out in the literature: Cognitive Behaviour Therapy (CBT), Acceptance and Commitment Therapy (ACT), Supportive Psychotherapy, and Compliance Therapy. Clinical trials and relevant articles for this review were found from a search of an online database (SCOPUS), and only trials that were published from the mid 1990's onwards were included. Furthermore, this review focused on clinical trials that included a control or wait-list condition and involved at least 20 participants.

When a review of academic scholarship is filtered to remove small or poorly controlled trials, ACT, Supportive Psychotherapy, and Compliance Therapy have little empirical support. Moreover, this dearth of evidence is emphasised when compared to the relatively large and somewhat robust body of literature supporting CBT for delusions. Ultimately, CBT is the most indicated psychotherapy option for delusions by virtue of its superior evidence base [5].

Cognitive behavior therapy

Cognitive behavior therapy is a versatile and strongly supported method of psychotherapy, and involves modifying dysfunctional thoughts using a combination of cognitive and behavioral modification techniques [1, 6]. The effectiveness of CBT for psychosis has been consistently observed, usually as an adjunct to antipsychotic medication. In fact, a number of meta-analyses attest to the effectiveness of CBT in the treatment of schizophrenia [7-11]. However, research germane to "schizophrenia" does not necessarily provide insights into the treatment of delusions within the context of schizophrenia. Thus, in order to consider the effectiveness of CBT for delusions, closer inspection of the literature is necessary.

A number of studies examining the effectiveness of CBT for positive symptoms of schizophrenia have claimed that CBT provides significant results. A meta-analysis by Zimmermann, et al. [12] revealed that randomized controlled trials of CBT (sometimes with the added benefit of single blind procedures) are able to elicit significant benefits. More specifically, the meta-analysis revealed a mean effect size of 0.37 (95% CI, 0.23, 0.52). Therefore, CBT appears to be able to consistently produce modest effect sizes in reducing positive symptoms when compared with standard psychiatric treatment, or some type of inactive intervention (e.g., befriending). However, there is a dissenting position that CBT does not achieve significant reductions in positive symptoms, and significant results seen in studies are possibly due to poor study designs [13]. Furthermore, CBT interventions may not translate into deferring rehospitalisation, nor improve social functioning [14]. Nonetheless, there is empirical evidence that has demonstrated the alleviation of positive symptoms, and continued benefits at six-month [15], twelve-month [16] and eighteen-month follow-ups [17]. One issue however, is that many of the cited studies listed above do not provide separate scores for hallucinations and delusions. Hence, it begs the question: was the reduction in positive symptoms produced by significant reductions in delusional symptoms or by significant reductions in hallucinations? The importance of this question is underscored in light of studies demonstrating that hallucinations and delusions can respond very differently to CBT [18]. Therefore, scores pertaining to positive symptoms inevitably provide ambiguous information. In consideration of the above, large literature reviews, such as those mentioned above, are incapable of clearly answering the following question: is CBT effective in treating delusions?

Within the extensive body of literature germane to schizophrenia, there are several, well-controlled studies that look explicitly at the effectiveness of CBT for delusions [16-23]. The outcomes from these cited studies provide support for the argument that CBT helps ameliorate delusional symptoms, above and beyond the effects of treatment as usual (TAU). However, these studies may not necessarily achieve the same type of symptom reduction, and therefore the results are difficult to assess collectively. For instance, Garety et al. [2] observed a significant decrease in delusional conviction; conversely, Kuipers et al. [17] recorded significant reductions in delusional distress. Although such differences may simply reflect the nature of the therapy that was administered, it does draw into question the statistical validity of studies, particularly the issue of utilising multiple comparisons with unaltered alpha values. In other words, many studies claim "significant" results because their statistical analyses suggest that there is less than a 5% chance of a false result. However, the odds of incorrectly claiming a significant result (i.e., having a Type II error) are actually much higher than 5% in some studies because researchers use a wide range of dependent variables [24].

Notwithstanding issues pertaining to statistical validity and conflicting dependent variables, experiments that randomly allocate patients, such as studies by Durham et al. [23] and Morrison et al. [22] constitute the second highest level of evidence according to NHMRC standards for interventions [25]. However, simply deeming studies as "effective" or not, is vague and makes it difficult to translate research outcomes into meaningful principles for clinical practice. Hence the need to closely examine the literature to reveal important information, namely, therapeutic factors that significantly contributes to therapeutic efficacy, such as therapy duration.

In many of the aforementioned studies, participants are typically individuals who have experienced chronic symptoms of schizophrenia, partially because antipsychotic medication has failed to adequately alleviate their delusional symptoms. Despite the difficulties with treatment-resistant schizophrenia, CBT has demonstrated effectiveness as measured by immediate post-intervention assessment [16,18,21,22]. Moreover, follow-up assessments have revealed benefits over TAU groups at three months [18,23], 12 months [22], 18 months [17], and even five years post intervention [16]. Therefore, the results for CBT as both an immediate and long-term treatment for delusions are substantiated in the literature. Although there are only several controlled studies that explicitly examine the effectiveness of CBT for delusions, there is a general consensus among these studies suggesting that CBT can elicit modest to moderate improvements in delusions [5]. Moreover, the benefits are not just limited to individuals with treatment-resistant schizophrenia (who are experiencing inter episode residual symptoms), but also individuals who are newly diagnosed or experiencing an acute psychotic episode [12,26,27]. Interestingly, some studies even suggest that CBT has increasing effectiveness over time [18,28], however, such results are not consistently displayed among studies. Nonetheless, a meta-analysis of 5 pertinent studies by Pfammatter, et al. [5], which collectively looked at the outcome for 196 patients with delusions, revealed that CBT engendered a mean effect size of 0.47 (95% CI, 0.18, 0.75). Thus, there is robust, level 1, NHMRC evidence to support the efficacy of CBT for the treatment of delusions [25]. However, there is a small minority of scholars who assume a somewhat different position.

A meta-analysis by Sarin, et al. [28] revealed that CBT may not achieve the significant results posited by other meta-analyses. Sarin, et al. [28] contend that CBT for delusions can achieve effect sizes in the moderate range, but such results are unreliable (i.e., statistically non-significant). More specifically, Sarin et al. [28] revealed a mean post-treatment effect size of 0.63 (N = 322; 95% CI, -0.86, 2.12) when compared with other psychological treatments, such as supportive psychotherapy (please note, the confidence intervals stated above render the effect seen in this study as non-significant). Similarly, a non-significant effect size (of 1.57) was obtained when comparing follow-up scores for CBT against TAU (N = 174; 95% CI, -0.42, 3.56) (n.b., given that the confidence intervals go beyond 0 the effect achieved in this study was also non-significant). Thus, Sarin et al. [28] undermines confidence in the reliability and efficacy of CBT for delusions. The discrepancy between Sarin et al. [28] and Pfammatter et al. [5] is explained (at least in part) by the inclusion criteria adopted by the respective studies. In particular, Sarin et al. [28] avoided studies that did not adopt masked assessment procedures (i.e., the assessors were aware of which group participants were in), which raises the question, does knowing a participant's group-allocation influence

post-intervention assessment and consequently the results of a study? The answer appears to be yes, and considerably thus. A meta-analysis by Wykes, et al. [29] revealed that the absence of single-blind procedures could inflate effect sizes. Indeed, non-blinded trials of CBT for schizophrenia (but not delusions per se) could inflate effect sizes by between 50-100%. Therefore, although CBT has been demonstrated to achieve improvements in overall symptoms, such benefits may not be as pronounced. Additionally, the meta-analysis by Wykes et al. [29] suggests that the posited superiority of CBT over TAU is to some extent exaggerated; it also provides a potential explanation for why Sarin et al. [28] revealed a non-significant result (i.e., by not including poorly controlled studies, their analysis revealed weaker results). Although such outcomes are disparaging to some degree, they do not necessarily invalidate the efficacy of CBT for delusions. Ultimately, the preponderance of studies suggests that CBT can produce moderate and meaningful change; however, there is a need to confirm this conclusion with additional well-controlled trials.

Acceptance and commitment therapy

Acceptance and Commitment Therapy (ACT) has been gaining prominence in psychological services and published literature. ACT works on the premise that attempting to suppress mental events is not helpful; rather, ACT promotes experiencing negative thoughts in an accepting, non-judgmental and mindful way [30]. This therapeutic modality is built upon a complex theory called Relational Frame Theory, the details of which are beyond the scope of this review [31]. Despite the rapidly growing popularity of ACT, its usefulness for patients with schizophrenia is not yet firmly established. Nonetheless, studies that have used ACT for psychotic disorders have revealed some promising results [32], however, the research is still very much in its infancy. It is important to note that some studies that utilise ACT for psychosis either do not report separate scores for delusions, or fail to clearly articulate the various changes that occur in delusional symptoms [33]. Nevertheless, there is some evidence to suggest that ACT can help patients who are suffering psychotic symptoms, such as auditory hallucinations [34].

With the exception of individual case studies [35], only one study has clearly examined the influence of ACT on delusional symptoms; Bach and Hayes [36] conducted a randomised trial involving eighty patients, with half receiving TAU, and the other half receiving TAU plus four sessions of ACT. Results suggest that participants exposed to ACT who failed to see the possible falsity of their delusions experienced more distress than the TAU group. Therefore, it appears that ACT has the potential to augment distress with some patients, particularly those who are heavily invested in their delusions or have minimal potential to gain insight. However, patients who were treated with ACT and who were also able to acknowledge that their beliefs might be false, experienced a reduction in distress (as indicated by comparing rehospitalisation rates between the ACT and TAU groups). Such results are rather perplexing, and Bach and Hayes [36] speculate that ACT may have undermined a prime coping strategy in the group of participants who were unable to see the falsity of their beliefs. Regardless of the reason, it should be acknowledged that four sessions of ACT is not necessarily standard practice, and it could very well be that additional sessions would have proved beneficial. In summary, there is simply not enough evidence to draw conclusions with any confidence; the literature is undeveloped and the current evidence is far from convincing.

Supportive psychotherapy

Although supportive psychotherapy shares a number of attributes with CBT, it is distinguished by its greater emphasis on supportive counselling, and providing reassurance and guidance; in contrast, CBT focuses more on changing patterns of thinking and behaviour in order to reduce distress. Supportive psychotherapy is frequently used as a comparison or control condition in studies. Some studies examining delusions, positive symptoms, or overall symptoms suggest it can yield outcomes superior to TAU groups; in fact, it can occasionally produce results that are fairly equal to CBT [23,37-39].

However, a broader look at the literature creates a somewhat different picture. A meta-analysis of 21 studies by Buckley, et al. [40] suggested that supportive psychotherapy has few, if any benefits over standard care. Furthermore, CBT for schizophrenia (but not delusions per se) often out-performs supportive therapy at short, medium and long-term follow-ups in terms of performance on general functioning measures [40]. Thus, the literature suggests that supportive therapy has some potential to espouse positive change in schizophrenia. However, CBT is generally a more consistent and effective form of therapy for delusions and other symptoms of schizophrenia, and therefore is superior to supportive psychotherapy.

Compliance therapy

Unlike other psychotherapies, compliance therapy is principally concerned with improving medication adherence. Interventions are short and begin during the acute phase of the illness with booster sessions in the ensuing period. The main component of compliance therapy is motivational interviewing, designed to increase medication compliance. The utility of comparing this therapy with other forms is the potential to isolate elements of therapy that are particularly powerful (namely motivational interviewing and medication adherence). A study of 47 patients that focused on psychotic disorders (and therefore not exclusively schizophrenia) found compliance therapy was significantly linked to improved global functioning and medication adherence [41]. Furthermore, the effects were observed at a six-month follow-up, and were significantly better than the effects of a supportive counseling intervention (that was equivalent in time/duration). However, such results are overshadowed by the majority of findings which suggest that compliance therapy has no significant benefit on indices such as medication adherence, symptoms, and global functioning [42-48]. Additionally, most studies have failed to report changes in delusional symptoms; hence, there is little to suggest that compliance therapy is effective for delusions beyond TAU.

Therapeutic factors that contribute to therapeutic efficacy

Given that CBT appears to fail for some individuals, it underscores the need to examine what makes some interventions effective. Inspection of efficacious studies reveals some common threads in therapeutic approach. Sarin et al. [28] notes that CBT for individuals with schizophrenia had better outcomes if the intervention involved 20 sessions or more, which is perhaps a reflection of the severity of the disorder, as well as the time needed to induce long-term change. However, brief CBT for psychosis (6-10 sessions) can also achieve significant results and therefore begs the question: do longer interventions consistently produce better results over short-term interventions? Unfortunately, a Cochrane review exploring this was unable to answer this question due to a shortage of evidence [49].

A revealing study by Morrison and [50] examined approaches from experts in CBT for psychosis; the study synthesized important techniques and principles using a Delphi method. The study revealed the following principles were strongly endorsed by the panel: (1) a complete assessment of mental health with a focus on emotional responses emanating from specific situations and cognitions; (2) practical plans and homework assignments, made in collaboration with the client, (3) the client learning to review experiences and thus develop further insights, (4) viewing symptoms of psychosis as relatively normal.

These principles reinforce conclusions from previously published manuals and articles [51]; and more recent publications, which echo existing maxims [52] underscore the importance of rapport, genuine collaboration, and insightful formulations. Indeed, these principles may be more important than actually changing the cognitive biases that foment psychotic symptoms. Evidence to support this position can be found in studies where improvements in delusional symptoms appear to bare no relationship with improvements in cognitive reasoning [53]. Ultimately, the key therapeutic ingredients required for a successful outcome has not evolved significantly since the mid 1990's. Therefore, in many respects, recent publications [54] are in essence just confirming principles and guidelines from previous publications [55,56].

Therapeutic differences and similarities between CBT and ACT

As discussed above, there is a clear contrast between the ways CBT and ACT target reducing delusional symptoms. In short, CBT typically aims to improve dysfunctional thoughts and beliefs by helping people change the patterns in their thinking and thereby enhance one's mental health. Alternatively, ACT rejects the CBT notion of thoughts being right or wrong, instead it promotes acceptance, defusion, and mindfulness, thus allowing one to take constructive action towards important values. Given the growing popularity of ACT [30] an important questions facing clinicians at the moment is which method to adopt. In order to answer this question, clinicians should look at the evidence as well as be aware of how the two methods are similar and different.

CBT and ACT are similar because they encourage patients to confront challenging scenarios and this can achieve a positive outcome partially through a process of exposure and habituation. CBT typically achieves this exposure through therapeutic goals and homework exercises; ACT achieves this by encouraging the patient to follow his or her values. In this regard, CBT and ACT are similar insofar as both paradigms encourage patients to face distressing scenarios and find a way to tolerate their internal responses.

The area however where CBT and ACT contrast the most is how to deal with cognitive events. CBT encourages patients to recognize patterns in thinking and to refine the contents of their thoughts. In stark contrast, ACT encourages patients to not change the contents of their thoughts per se, rather, to respond differently (i.e., in a more accepting manner using diffusion techniques and mindfulness). Ultimately, these two methods of therapy are antithetical; CBT suggests changing what one thinks, and ACT suggests accepting what one thinks. Thus, an examination of the theories underpinning these two modalities suggests that only one modality should work for delusions. However, as established above, both modalities have the potential to improve delusional symptoms (CBT however does have a far greater evidential base), leading to confusion about how significant results are achieved. One possible explanation is that both modalities alter the tone of one's internal dialogue. If one accepts that tone has an important influence on meaning when communicating with others, then presumably the relevance of tone in one's internal communication (i.e., one's thoughts to oneself) is also important. Such an explanation would explain why two seemingly conflicting modalities could achieve positive outcomes. This explanation, henceforth referred to as 'Internal Dialogue Theory – IDT' may be worthy of future research as a way of enhancing CBT. In other words, CBT for delusions may be enhanced by trying to improve the tone or inflection of one's thoughts, not just the contents or words.

Additionally, IDT is a possible explanation as to why CBT is successful. It is important to remember that delusional beliefs are held with pathological rigidity and CBT is sometimes unable to change the contents of a patient's thoughts. Hence, it is perplexing how CBT can elicit significant improvements whilst not altering cognitive errors/biases. It is possible that one of the key reasons why CBT can be successful has been overlooked because CBT does not explicate the tone of one's thoughts; it simply examines the contents/words. IDT may also explain why ACT is sometimes effective for delusional symptoms. However, IDT is not proposed herein as a means of undermining Relational Frame Theory; rather, as a therapeutic option that may enhance psychological education and therapeutic skills if it can be validated in future studies.

Research: Issues and Questions

Although some studies may achieve considerable levels of empirical robustness (such as the randomized controlled trials of CBT), it is important to highlight shortcomings and speculate about the direction of future studies.

It is also important that consumers of research understand exactly what is proclaimed by successful studies. Numerous studies can attest to the benefits of adjunctive psychotherapy for patients with schizophrenia. However, consumers need to appreciate that researchers are not consistent in the ways they define success. Studies frequently utilize one or two of the following options: a significant decrease in overall symptomology, a decrease in specific symptomology (i.e., positive symptoms, negative symptoms, preoccupation with delusions, conviction in delusional belief, etc.), increase in global functioning, rehospitalisation rates, and so forth. Given this rather long list of measures, it is difficult to operationalise what exactly efficacious means; furthermore, attempts to strengthen and simplify the literature (by way of meta-analyses) partially perpetuate the problem because such efforts amalgamate a range of different measures and thus provide vague, imprecise information. Such criticism however should not be misconstrued to posit that research has failed to reveal anything of merit.

Researchers should also question the assumption that success can be measured by a reduction in symptoms. Whilst a reduction in symptoms is clearly meritorious, it should not be presumed that a reduction in symptoms equals a proportionate increase in quality of life. In fact, research has shown that positive symptoms of schizophrenia and quality of life may only share a ~.2 correlation [57]. Thus, if the notion that improving a patient's overall quality of life is the ultimate priority, then the current practice of simply targeting conspicuous symptoms may not be the most effective strategy. Given that current psychometric measures of delusional beliefs [58] allow

researchers to examine the various dimensions of delusions, perhaps separating the influence of particular dimensions will allow clinicians to focus on more relevant dimensions. In other words, it should not be assumed that the various dimensions to delusional beliefs have an equal impact on quality of life; and if research was able to reveal which dimensions of delusions are more strongly correlated to changes in quality of life, it would allow clinicians to more efficiently and strategically target psychotic symptoms. Furthermore, there is the potential to re-examine current literature to determine whether certain dimensions of delusions, such as preoccupation, conviction, disorganization, bizarreness, and so on, respond differently to CBT techniques. Put simply, a meta-analysis of current research may be able to reveal which dimensions of delusions respond best to psychotherapy. However, it is distinctly possible that significant reductions in symptoms are best explained by a process of mediation. For example, focusing on delusional conviction may pave the way for a therapist to then reduce delusional preoccupation; such pathways, however, can only be confirmed using mediation analysis. Hence, future studies have great potential to add nuance to the current understanding of delusions, which will hopefully translate into more meaningful information for clinicians.

Finally, the legitimacy of this literature review must also be examined. That is, the validity of examining delusions independently of the other symptoms of schizophrenia must be considered. Given that delusions appear to be inextricably linked to other psychological variables, such as mood (particularly in paranoid schizophrenia) [59], it might well be argued that delusions are best examined together with other presenting symptoms. Put another way, there is an implicit assumption within this review that examining delusions exclusively provides valid information; an alternative view is that exploring delusions without simultaneously examining other symptoms, such as hallucinations, is overly reductionist. Although delusions appear to be intricately linked to co-morbid symptoms, for instance, delusions may be the product of hallucinations, it is also clear that delusions can fluctuate independently of other symptoms, or respond uniquely to therapy [21,59]. Another case in point, although delusions sometimes appear to be a product of anxiety, the delusion can persist once the anxiety is alleviated. Therefore, it stands to reason that delusions are (to a greater or lesser degree) independent of other symptoms and thus exclusive investigation is both valid and warranted. Indeed, a series of recent pilot studies that focus on a single causal factor in schizophrenia has proven surprisingly effective; hence a new assertion that CBT interventions should focus on a single key factor [54]. This slight paradigm shift contrasts previous methodologies by emphasizing the appropriateness and effectiveness of honing in on key, individual symptoms, such as delusions.

Conclusion

In light of the above, it appears that delusions are not impervious to therapy. Although delusions can be resistant to both medication and psychotherapy, CBT (in conjunction with medication) is the most promising treatment strategy [12]. Unfortunately, CBT has numerous components, and can vary considerably between therapists; thus, it is not clear which components are efficacious, or perhaps even detrimental. Additionally, future research may be able to identify attributes of patients that will help clinicians tailor CBT more effectively to an individual. The current body of literature, albeit extensive, generates myriad research opportunities, of which only a small number have been discussed herein. This review, although not comprehensive, endeavours to highlight that research and therapy of delusions is complicated and difficult; nevertheless, conventional psychology has made significant inroads, and future research in neuroscience, psychopharmacology and psychology has immense potential. Moreover, any progress in this particular area of research may have implications that can be extrapolated into other disorders that are characterized by delusions or over-valued ideas.

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